

ART. XII.—*On the Fossil contents of the Eocene Clays of the Altona Coal Shaft.*

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[Read 12th December, 1901.]

In a paper read by Messrs. T. S. Hall and G. B. Pritchard before this Society in September, 1896,¹ reference was made to a bore put down at Altona Bay to prospect for coal, and a list was given of the fossils met with. Their list was drawn up from the material supplied by the drill cores which was all that was then obtainable, and it was necessarily imperfect.

A shaft was subsequently sunk, and, although coal was won, the works were abandoned owing to the inflow of water. The waste tip from the sinking of this shaft is now available for collection, but is being rapidly dissipated by the tramping of stock, and by wind and rain. As the deposits passed through were highly fossiliferous, it has appeared to us desirable that a more adequate list of their contents should be published, as an assistance to a correlation of our Marine Tertiary beds.

The stratified deposits passed through before coal was reached, and their relation to one another, as judged from their position in the spoil heap, were as follows :—

(1). A coarse ferruginous grit apparently represents the uppermost part of the beds. In this we have failed to find any traces of fossils.

(2). A cream coloured sandy clay with nodules of yellow limestone occurs next. This deposit is very full of foraminifera (largely of the genus *Operculina*) and contains a fair number of brachiopods, but few gastropods or lamellibranchs. We have not included the brachiopods in our list, but they appear to be forms occurring in other typical Eocene formations.

(3). By far the largest amount of the spoil heap consists of blue and grey clays, with nodules of limestone. This material is rich in fossils, and bears a close lithological resemblance to the

¹ Proc. Roy. Soc. Vic., vol. ix. (New Series), p. 218.

deposits at Mornington and Grice's Creek, on the opposite side of Port Phillip, with which horizon its fossil contents correlate it. Out of 203 species of molluscs identified by us, only 26 (which are marked in our list with a dagger) are not included in the lists relating to the Mornington beds by Messrs. Hall and Pritchard in the last volume of this Society's Proceedings.¹

(4) These blue clays become finally mixed with a coarse water worn quartz gravel, and cease to be fossiliferous.

We are indebted to Messrs. Pritchard and Hall for assistance in the identification of some of the molluscs and to Mr. J. Dennant, F.G.S., for naming the corals. We have also to thank Mr. Coop, of North Williamstown, for having placed at our disposal a small collection of some of the larger forms which have added a few useful names to our list.

So far as possible we are depositing the specimens on which our identifications are based (including those given by Mr. Coop) with the National Museum. Other specimens have been lodged with the Geological Museum of the University. We have in addition a very large number of other forms which we are unable to identify as named species.

Lamellibranchiata.

- Dimya dissimilis*, Tate.
- Pecten murrayanus*, Tate.
- „ *dichotomalis*, Tate.
- Amusium zitteli*, Hutton.
- Lima bassii*, T. Woods.
- Limatula jeffreysiana*, Tate.
- Limea transenna*, Tate.
- Spondylus pseudoradula*, McCoy.
- Modiolaria singularis*, Tate.
- Crenella globularis*, Tate.
- Nucula tenisoni*, Pritchard.
- „ *atkinsoni*, Johnston.
- „ *morundiana*, Tate.
- Leda obolella*, Tate.
- „ *huttoni*, T. Woods.
- „ *apiculata*, Tate.

¹ Proc. Roy. Soc. Vic., 1901, vol. xiv. (New Series), part i, p. 46.

- Leda acuticauda*, Pritchard.
,, *vagans*, Tate.
† ,, *woodsii*, Tate.
,, *leptorhyncha*, Tate.
Limopsis belcheri, Adams and Reeve.
,, *morningtonensis*, Pritchard.
† ,, *multiradiata*, Tate.
Glycimeris laticostatus, Quoy and Gaimard.
Barbatia crustata, Tate.
,, *celleporacea*, Tate.
,, *simulans*, Tate.
Plagiarca cainozoica, Tate.
Cucullaea corioensis, McCoy.
Trigonia tubulifera, Tate.
Crassatellites communis, Tate.
Cardita delicatula, Tate.
Cardita scabrosa, Tate.
† ,, *tasmanica*, Tate.
Carditella lamellata, Tate.
Chama lamellifera, T. Woods.
Cardium hemimeris, Tate.
Chione cainozoica, T. Woods.
Meretrix eburnea, T. Woods.
,, *tenuis*, Tate.
Tellina cainozica, T. Woods.
† ,, *albinelloides*, Tate.
† ,, *aequilatera*, Tate.
Semele vesiculosa, Tate.
,, *krauseana*, Tate.
Corbula ephamilla, Tate.
,, *pixidata*, Tate.
Cuspidaria subrostrata, Tate.
Capistrocardia fragilis, Tate.

Gastropoda.

- Murex velificus*, Tate
,, *rhysus*, Tate.
,, *eyrei*, Tate.
,, *amblyceras*, Tate.



Murex lophoessus, Tate.

„ *trochispira*, Tate.

Muricidea camplytropis, Tate.

„ *asperulus*, Tate.

† *Typhis evaricosus*, Tate.

„ *acanthopterus*, Tate.

„ *laciniatus*, Tate.

Rapana aculeata, Tate (?).

Argobuccinum maccoyi, Pritchard.

Lotorium woodsi, Tate.

Lotorium textile, Tate.

† „ *oligostirum*, Tate.

† „ *gemmulatum*, Tate.

„ *protensum*, Tate.

„ *annectans*, Tate.

Colubraria tenuicostata, T. Woods.

Fusus dictyotis, Tate.

„ *senticosus*, Tate.

Latirofusus aciformis, Tate,

„ *exilis*, Tate.

„ *hexagonalis*, Tate.

Siphonalia longirostris, Tate.

Tritonofusus crebrigranosis, Tate.

Solutofusus carinatus, Pritchard.

Fasciolaria rugata, Tate.

„ *cristata*, Tate.

Latirus interlineatus, Tate.

Euthria cingulata, Tate.

„ *ino*, T. Woods.

Leucozonia micronema, Tate.

Phos tardicrescens, Tate.

Loxotaphrus variciferus, Tate.

Nassa tatei, T. Woods.

Voluta ancilloides, Tate.

„ *hannafordi*, McCoy.

„ *maccoyi*, T. Woods.

„ *sarissa*, Tate.

„ *pseudolirata*, Tate.

„ *antisclaris*, McCoy.

- Voluta strophodon*, McCoy.
,, *weldii*, T. Woods.
Lyria harpularia, Tate.
Mitra alokiza, T. Woods.
,, *leptalea*, Tate.
,, *atractoides*, Tate.
Conomitra ligata, Tate.
,, *othone*, T. Woods.
Marginella propinqua, Tate.
,, *inermis*, Tate.
,, *micula*, Tate.
,, *wentworthi*, T. Woods.
Ancilla semilaevis, T. Woods.
† ,, *hebera*, Hutton.
,, *pseudaustralis*, Tate.
Harpa lamellifera, Tate.
Columbella crebricostata, T. Woods.
Cancellaria varicifera, T. Woods.
,, *platypleura*, Tate.
,, *exaltata*, Tate.
,, *capillata*, Tate.
,, *gradata*, Tate.
† *Terebra leptospira*, Tate.
Pleurotoma salebrosa, Harris.
,, *trilirata*, Harris.
,, *septemlirata*, Harris.
,, *optata*, Harris.
,, *clarae*, T. Woods.
,, *murndaliana*, T. Woods.
† ,, *samueli*, T. Woods.
† ,, *paracantha*, T. Woods.
† ,, *subconcava*, Harris.
Bathytoma rhomboidalis, T. Woods.
Drillia integra, T. Woods.
,, *vixumbilicata*, Harris.
,, *oblongula*, Harris.
Cordiera conospira, Tate.
Clathurella bidens, T. Woods.
,, *obdita*, Harris.

- Buchozia hemiothone*, T. Woods.
Mitromorpha daphnelloides, T. Woods.
Teleochilus gracillimum, T. Woods.
† *Bela crassilirata*, Tate.
Columbarium acanthostephes, Tate.
 ,, *foliaceum*, Tate.
 ,, *craspedotum*, Tate.
Conus cuspidatus, Tate.
 ,, *pullulescens*, T. Woods.
 ,, *ligatus*, Tate.
 ,, *heterospira*, Tate.
 ,, *dennanti*, Tate.
Cypraea leptorhyncha, McCoy.
 ,, *eximia*, McCoy.
† ,, *sphaerodoma*, Tate.
 ,, *contusa*, McCoy.
 ,, *pyrulata*, Tate.
Trivia avellanoides, McCoy.
Erato minor, Tate.
 ,, *australis*, Tate.
Semicassis sufflata, T. Woods.
Morio gradata, Tate.
Natica hamiltonensis, T. Woods.
 ,, *subnoae*, Tate.
 ,, *perspectiva*, Tate.
 ,, *polita*, T. Woods.
 ,, *subinfundibulum*, Tate.
Solarium acutum, T. Woods.
Heliacus wannonensis, T. Woods.
† *Collonia parvula*, T. Woods.
† *Scala lampra*, Tate.
Crossea princeps, Tate.
Turritella platyspira, T. Woods.
 ,, *conspicabilis*, Tate.
 ,, *acricula*, Tate.
 ,, *murrayana*, Tate.
† ,, *tristira*, Tate.
Tenagodes ocellus, T. Woods.
Thylacodes conohelix, T. Woods.

- † *Thylacodes actinotis*, Tate.
- Eulima danae*, T. Woods.
- ,, *acutispira*, T. Woods.
- Niso psila*, T. Woods.
- Chileutomia subvaricosa*, Tate and Cossmann.
- Mathilda transenna*, T. Woods.
- Cerithium apheles*, T. Woods.
- † *Ataxocerithium concatenatum*, Tate.
- Newtoniella cribarioides*, T. Woods.
- Triforis wilkinsoni*, T. Woods.
- ,, *sulcata*, T. Woods.
- ,, *planata*, T. Woods.
- Fissurellidea malleata*, Tate.
- Emarginula wannonensis*, Harris.
- Scaphander tenuis*, Harris.
- Ringicula tatei*, Cossmann.
- ,, *tenuilirata*, Cossmann.
- Bulinella aratula*, Cossmann.
- ,, *infundibulata*, Cossmann.
- ,, *exigua*, T. Woods.
- † ,, *cuneopsis*, Cossmann.
- Roxania scrobiculata*, Tate and Cossmann
- † *Acteon distinguendus*, Cossmann.
- † ,, *olivellaeformis*, Tate and Cossmann.
- † *Acteon funiculifer*, Cossmann.
- Semiacteon microplocus*, Cossmann.
- Umbraculum australe*, Harris.
- Limacina tertiaria*, Tate.
- Styliola rangiana*, Tate.
- Vaginella eligmotoma*, Tate.

Scaphopoda.

- Dentalium aratum*, Tate.
- ,, *mantelli*, Zittel.
- ,, *subfissura*, Tate.

Actinozoa.

- Flabellum victoriae*, Duncan.
- ,, *gambierense*.
- Placotrochus deltoideus*, Duncan.

Placotrochus elongatus, Duncan.

Sphenotrochus australis, Duncan.

„ *alatus*, T. Woods.

Trematotrochus fenestratus, T. Woods.

Deltocyathus viola, Duncan.

Conosmilia elegans, Duncan.

„ *anomola*, Duncan.

Bathyactis lens, Duncan.

Balanophyllia armata, Duncan.

Notophyllia gracilis, Dennant.
